

normal colour in an oviduct egg. (The eggs of this latter species appear olive-green when laid, owing to the addition of a superficial yellow or buffish layer which modifies the appearance of the blue colour.)

In some species, as for example the White-browed Jay-thrush, *Garrulax sannio*, the eggs vary from one individual to another and may be either blue or white; while it is not unknown for occasional individuals of species such as the Jackdaw, *Corvus monedula*, and the Song Thrush, *Turdus philomelus*, which usually lay blue eggs, to lay eggs with a white ground colour. Since the trend towards white eggs is already established in South Africa, these records from further north may represent a similar tendency, or a zone of intergradation, rather than abnormal variation.

References:

Friedmann, H. 1948. The parasitic cuckoos of Africa. *Washington Acad. Sci. Monogr.* No. 1.

Harrison, C. J. O. The distribution, within the eggshell, of the pigments producing egg coloration. *Bull. B.O.C.* (in press).

## Some subspecies of *Gracula religiosa* (Linn.) living in Indonesia

by A. HOOGERWERF

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From the measurements given below it is evident that, with the exception of *robusta* and *batuensis*, size differences in the races of *Gracula religiosa* seem not to be important enough to be accepted as subspecific characters. The birds belonging to this species obtained by me on Bawean Island and on the islands of the Kangean Archipelago, do not differ much in size from specimens of the nominate race.

According to Kuroda<sup>1</sup> the subspecies *baweana* was separated on account of the bare occipital lappets being wider and longer and the sides of the crown being more greenish than in the typical form living on Java. When comparing five adult skins from Bawean with many of the typical race before me, none of these characters could be found, which makes the diagnosis quite unfit for distinguishing *baweana* from *religiosa*. There is not a green hue on the crown and the naked lappets are not wider or longer but the contrary is true: the lappets in our *baweana* average smaller and narrower than in *religiosa*. The only difference I could discover is formed by the basal junction of the lappets being well visible in *baweana* and the feathered strip between the lappets averaging more narrow than seems to be the case in *religiosa*. On account of this character *baweana* closely resembles *enganensis* from which, however, it differs in having the naked skin below the eye (Stresemann's "Subocularfeld"<sup>2</sup>) more extensive, for this area is very narrow and small in *enganensis* as was pointed out by Junge<sup>3</sup>. Also the feathered strip separating the lappets (Stresemann's "Parialstreif") is wider in *baweana*, which seems also to be a trifle heavier in bill and feet.

In view of the great value Stresemann attached to the basal connection of the occipital lappets, I paid special attention to this character. As a result of my study on about 40 skins of this grackle I am not very enthusiastic about this character and consider it very risky to use it for separating certain birds. To begin with it seems to me not quite clear what Stresemann really means when speaking about that character; that is

to say, whether it is necessary that the connection between the two lappets must be visible outside the feathering or we have to push away those feathers and lift up the lappets. In the rare cases where the connection is visible outside the short feathers, this might be caused by damage done to the plumage or by the decay of the skin which is very weak in that particular area. When lifting up the naked lappets one may succeed in discovering that junction, even in many birds belonging to the typical form which—according to Stresemann—should have the lappets separated. In three skins of *batuensis* before me two show this basal junction but in the third specimen I failed to discover it, even when lifting the lappets, and the "Parialstreif" is as wide as the "best" specimen of *religiosa*. Nevertheless Stresemann is of opinion that *batuensis* is not a valid race and united it with *enganensis* which shows the basal connection or has the "Temporalwulst" very narrow.

In our Kangean birds too the basal connection of the lappets is sometimes present but as often not. Some uniformity on this point can be established in *enganensis* of which, however, we could examine only three skins and in the five adult birds of *baweana* in which the basal connection is present or the lappets are separated by a very narrow "Parialstreif".

To see some subspecific character in size differences of the occipital lappets seems not well justified, because there is a considerable amount of variation in birds belonging to the same subspecies which is very obvious in the large series of the typical race before me and still more in the three skins of *batuensis*. In our material of *religiosa* it is the female, in *batuensis* the male which has the largest occipital lappets; as a rule young birds have smaller lappets than adult ones.

There is also considerable individual variation in the form and in the area of the naked skin below the eye and the skin which runs from the lappets to the corner of the eyes (Stresemann's "Temporalwulst"). It may be considered as certain that on this there is much variation in the living bird, but the difference may be accentuated by the taxidermist, a fact which was pointed out by Stresemann. In my opinion this also holds good for the feathered area separating the "Temporalwulst" from the eye-corner, to which Stresemann attaches also some subspecific value when comparing *enganensis* with birds of the typical race.

The colour of the plumage does not vary much in the birds before me, but some of them show a greenish instead of a violet-bluish hue on most of the feathers, sometimes on the back, sometimes on the under parts or on both as is the case in the three birds of *batuensis*. Much green on the upper parts occurs also in a bird from Sumatra, in one from Java, one from Bali and in two from Durian, all belonging to the typical form. All birds from Bawean and Kangean are less glossy on the occiput: the velvet like "cushions" are not only much duller but average smaller than in *religiosa*. But all those birds had poorly developed gonads which might influence the plumage of that special area and not be of subspecific value. And I think this also holds good for the size and form of the bill to which Stresemann attached some importance, which could not be confirmed by Junge<sup>4</sup>.

Concluding I think *baweana* to be a very "thin" race; birds from Kangean can best be included into *religiosa* in accordance with the present situation. Perhaps the subspecies *batuensis* may only be maintained

because of its slightly larger wing, though Stresemann does not accept this character. Also Finsch<sup>5</sup> found for four birds from Pulau Batu wing measurements from 190 to 195 mm. The subspecies *enganensis* is distinguishable from birds belonging to the other forms on account of the narrow "Parialstreif" and the small "Subocularfeld".

*Measurements:* (in mm.)

♂♂ Wing; *religiosa*: 168, 174, 176, 183, 184; Kangean bird: 177; *baweana*: 178, 182, 185; *enganensis*: 172, 172, 177; *batuensis*: 178, 193; *robusta*: 211 mm.

Tail; *religiosa*: 78, 81, 83, 89; Kangean bird: 93; *baweana*: 86, 87, 90; *enganensis*: 83, 92; *batuensis*: 80, 93; *robusta*: 97 mm.

Culmen; *religiosa*: 26.5, 27, 27.1, 27.5, 27.7; Kangean bird: 25.5; *baweana*: 25, 27.2, 27.5; *enganensis*: 24.2, 25.5, 27; *batuensis*: 27, 28.8; *robusta*: 25.8 mm.

*Max., min. and average measurements:*

	<i>religiosa</i>	<i>religiosa</i> (Kangean)	<i>baweana</i>	<i>enganensis</i>	<i>batuensis</i>	<i>robusta</i>
Wing:	168-184	177	178-185	172-177	178, 193	211
	<u>177</u>		181·67	173·67	185·50	
	<i>ex lit:</i> 174		<i>ex lit:</i> 174·50	<i>ex lit:</i> 163-176 (5♂)		
Tail:	78-89	93	86-90	83, 92	80, 93	97
	<u>82·75</u>		87·67	87·50	86·50	
			<i>ex lit:</i> 85	<i>ex lit:</i> 80-86 (5♂)		
Culmen:	26·5-27·7	25·50	25-27·5	24·2-27	27, 28·8	25·8
	<u>27·16</u>		26·57	25·57	27·90	
			<i>ex lit:</i> 27	<i>ex lit:</i> 24-27 (5♂)		

♀♀ Wing; *religiosa*: 169, 169, 172, 179, 181; Kangean birds: 165, 168, 171, 172, 173; *baweana*: 177; *batuensis*: 180 mm.

Tail; *religiosa*: 78, 80, 82, 83, 85; Kangean birds: 79, 83, 83, 84, 86; *baweana*: 87; *batuensis*: 82 mm.

Culmen; *religiosa*: 23, 25.3, 26.2, 27.5, 28.1; Kangean birds: 25.1, 25.2, 25.5, 25.7, 26; *baweana*: 23.7; *batuensis*: 30 mm.

*Max., min. and average measurements:*

	<i>religiosa</i>	<i>religiosa</i> (Kangean)	<i>baweana</i>	<i>enganensis</i> ( <i>ex lit:</i> 1♀)	<i>batuensis</i>
Wing:	169-181	165-173	177	173	180
	<u>174</u>	169·80			
	<i>ex lit:</i> 162		<i>ex lit:</i> 170		
Tail:	78-85	79-86	87	86	82
	<u>81·60</u>	83			
			<i>ex lit:</i> 84		
Culmen:	23-28·1	25·1-26	23·70	25	30
	<u>26·02</u>	25·50			
			<i>ex lit:</i> 24·50		

*Weight:*

♂♂ *religiosa*, Kangean Archipelago: 250 gr.; *baweana*: 290, 338 gr.

♀♀ *religiosa*, Kangean Archipelago: 160, 220, 240, 260, 270 gr; *baweana*: 330 gr.

Shortly before publishing this paper, Vol. XV of Peters' Checklist of Birds of the World appeared in which Oberholser's *Gracula javensis baweana* together with Salvadori's *Gracula enganensis* are united with *Gracula r. religiosa* Linnaeus. So far as it concerns the first subspecies I can agree, but I am of the opinion that there is sufficient reason to uphold *enganensis* as has been pointed out earlier by Junge<sup>3</sup>.

I could not examine a single skin of Rensch's *mertensi*, but in the measurements, it closely resembles *religiosa*.

#### References:

- <sup>1</sup> Kuroda, N. *Birds of the Island of Java*, Vol. 1, 1933, p. 34-36.
- <sup>2</sup> Stresemann, Erw. Einiges über das Genus *Gracula* und seine Arten; *Nov. Zoöl.*, 19, 1912, p. 312-315.
- <sup>3</sup> Junge, G. C. A. On a collection of birds from Engano; *Treubia*, 16, 1938, p. 355-356.
- <sup>4</sup> Junge, G. C. A. Fauna Simalurensis—Aves; *Temminckia* I, 1936, p. 65/6.
- <sup>5</sup> Finsch, O. Das Genus *Gracula* Linn. und seine Arten, nebst Beschreibung einer neuen Art; *Notes Leyden Museum*, 21, 1899/1900, p. 1.

## Eggs of the Great Sand Plover, *Charadrius leschenaultii* Lesson, from Somaliland

by C. J. O. HARRISON

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When the collection of eggs presented to the British Museum (Natural History) by R. E. Drake-Brockman was incorporated with the systematic collection, it was found that some clutches had only the vernacular name of the bird with them. One such clutch collected at Berbera, Somalia, on 9th March 1913, (B.M. No. 1946.7.30) had the name 'Dotterel'. On the basis of the size and appearance of the eggs it was possible to eliminate most of the charadriine plovers breeding in the area as species that could have produced them. Captain C. R. S. Pitman suggested that these might be the eggs of the Great Sand Plover, *Charadrius leschenaultii*.

The eggs measure 37.4 x 25.1, 35.8 x 26.5, 36.6 x 25 mm. They bear a close resemblance to some clutches of *C. hiaticula*. Two eggs are pyriform, while the third is a little more ovate. They are a pale buffish-stone in ground colour, with a faint greenish tinge in some parts. They are marked with fairly profuse blackish spots and specks, very variable in size, the larger markings tending to be drawn out into lines, streaks and comma-shaped marks. The underlying markings, in various shades of pale mauve and grey, are fewer than the superficial ones. There is a tendency for the markings to be concentrated in a zone around the larger end. This is most marked in the atypically-shaped egg, in which the pointed third of the shell is mostly unmarked, and is less apparent in the other two eggs.

Eggs from the breeding range of the species in Asia have been described by Grote (1924-5). The description tallies closely with that of the clutch taken by Drake-Brockman. The Asiatic eggs were, however, of a larger size, measurements being: 38 x 29, 37.2 x 28.4, 38 x 28.8, 35.2 x 29.3, 40.3 x 29.8, 38 x 26.5, 38.2 x 26.6 mm. The size difference is relatively slight (about 2 mm. on each dimension) and this might be explained by the fact that the birds suspected of breeding in the Red Sea area are smaller than the typical Asiatic birds.

The normal breeding range of *C. leschenaultii* is across the Kirghiz region and Turkestan, and around the Caspian Sea, coming no nearer to